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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/540,646	06/24/2005	Toshiaki Ueno	10030029-05	8880

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EXAMINER	
DOLE, TIMOTHY J	

ART UNIT	PAPER NUMBER
2858	

DATE MAILED: 05/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/540,646	UENO ET AL.	
	Examiner	Art Unit	
	Timothy J. Dole	2858	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-12 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-7 and 9-12 is/are rejected.

7)☒ Claim(s) 8 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 24 June 2005 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 6/24/05.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 3 and 7 objected to because of the following informalities: claim 3 recites the limitation "the potential" on line 3, and claim 7 recites the limitation "said chamber structure" on lines 2-3, both of which lack antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-4 and 9-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Hiroli (US 6,729,922).

Referring to claims 1 and 11, Hiroli discloses a display substrate testing apparatus comprising a circuit under test, which is an electronic circuit comprising a plurality of thin-film transistors, and electrodes or wires connected to said circuit under test comprises: a probe device (fig. 1A) for testing a circuit under test (fig. 2A) and electrodes or wires of a display substrate providing a two-dimensional array of drive circuits on a substrate for a display substrate comprising a circuit under test (fig. 2A), which is an electronic circuit comprising a plurality of thin-film transistors (fig. 1B (110)), and the electrode or wire connected to said circuit under test (fig. 1B), and at least said circuit under test constructs a drive circuit (fig. 1A (107)) for driving each pixel of the display

(column 6, lines 42-48), wherein relatively high-density plasma (column 6, lines 1-34) is generated between said electrode or wire (fig. 1A (105)) and a test electrode (fig. 1A (106)), a test signal is transmitted between said electrode or wire and said test electrode through said plasma (column 6, lines 53-59), and said circuit under test can be tested without contact with said electrode or wire (fig. 1A); a signal generation source (fig. 1A (101)) for generating a test signal provided to said electrode or wire; and a signal comparator for comparing said test signal and the output signal that is output from said drive circuit when said test signal is applied through said plasma and said electrode or wire to each of said drive circuits on said substrate (column 4, lines 30-38).

Referring to claim 2, Hiroli discloses the device as claimed wherein said plasma is continuously generated over a plurality of units of said drive circuit (fig. 1A); only the specified drive circuit being tested is set in the on state (column 6, lines 42-53); and the electrical characteristics of said specified drive circuit are tested by applying said test signal to said specified drive circuit (column 6, lines 53-59).

Referring to claim 3, Hiroli discloses the device as claimed wherein a control electrode (fig. 1B (113)) is disposed between said test electrode and said electrode or wire, and the excess level of said test signal transmitted through said plasma is controlled by controlling the potential applied to said control electrode (column 7, lines 14-28).

Referring to claim 4, Hiroli discloses the device as claimed wherein two bias power supplies (fig. 1A (108) and (107)) connected independently to said test electrode and said circuit under test are provided (fig. 1A); and the electric fields near the interface

of said plasma and the test electrode and the interface of said plasma and said electrode or wire can be controlled by one or both of said bias power supplies (fig. 1A).

Referring to claim 9, Hiroli discloses the device as claimed wherein said plasma is chemically inert relative to said electrode or wire (column 6, lines 31-36).

Referring to claim 10, Hiroli discloses the device as claimed wherein said plasma includes a composition that ionizes at least oxygen (column 6, lines 31-36).

Referring to claim 12, Hiroli discloses the device as claimed wherein a means for X-Y motion for moving the probe device in the horizontal direction in two dimensions along the electronic circuit under test or the display substrate surface is provided (column 19, lines 43-47).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hiroli.

Referring to claim 5, Hiroli discloses the device as claimed except wherein the electrical characteristics of said drive circuit are tested by separating and generating said plasma on said substrate corresponding to the position of each unit of said drive circuit, said test electrode is disposed at every separated position, and said test signal is applied to said drive circuit at each position.

According to MPEP 2144.04 (VI) (B), the duplication of parts does not render a claim patentably distinct unless there is a new or unexpected result. Since the measuring device of Hiroli can be applied separately to each pixel, separating and generating the plasma on the substrate corresponding to the position of each unit of the drive circuit would obtain no new or unexpected results. Therefore the claim is not considered to be patentable over the prior art of record.

It would have been obvious to one skilled in the art at the time of the invention to incorporate the plasma separation and test signal application into the device of Hiroli for the purpose of having a test device at each pixel location whereby eliminating the time consuming need for moving the test electrode to the various pixel locations.

6. Claims 6 and 7 rejected under 35 U.S.C. 103(a) as being unpatentable over Hiroli in view of Morita et al. (US 5,908,565).

Referring to claims 6 and 7, Hiroli discloses the device as claimed, further comprising a plasma generation source for generating said plasma (fig. 1A (101)).

Hiroli does not disclose a chamber structure for confining said plasma and releasing said plasma to at least said electrode or wire of said drive circuit, or an exhaust for exhausting said plasma or an air curtain is disposed at positions along the outer periphery of said chamber structure.

Morita et al. discloses a plasma source comprising a chamber structure (fig. 1 (30)) for confining said plasma and releasing said plasma to at least said electrode or wire of said drive circuit, and an exhaust (fig. 3 (100)) for exhausting said plasma or an air

curtain is disposed at positions along the outer periphery of said chamber structure (abstract).

Therefore, it would have been obvious to one skilled in the art at the time of the invention to incorporate the chamber and exhaust of Morita et al. into the device of Hiroli for the purpose of containing and removing ionized particles after the plasma is no longer needed. (abstract).

Allowable Subject Matter

7. Claim 8 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter: claim 8 is considered to contain allowable subject matter due to the inclusion of claim limitation "said plasma has a plasma density that can produce a current flowing in said circuit under test of between about 1 μA to 10 μA".

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patents are cited to show the state of the art with respect to testing using plasma.

USPN 6,268,719 to Swart: This patent shows an apparatus for testing circuit boards using a movable test that emits plasma.

USPN 5,202,623 to LePage: This patent shows an apparatus for testing circuit boards using a plasma chamber for non-contact testing.

USPN 4,967,149 to Doemens et al.: This patent shows an apparatus for testing wiring using non-contact plasma apparatus.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J. Dole whose telephone number is (571) 272-2229. The examiner can normally be reached on Mon. thru Fri. from 8:00 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on (571) 272-2399. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TJD

DIANE LEE
SUPERVISORY PATENT EXAMINER